MATH 108-003
Introductory Calculus with Business Applications
Fall 2022 (3 credits)

Instructor:	Scott Carson;
Class Time/Location:	7:20 – 8:35PM on Tuesdays and Thursdays in Horizon Hall 1014;
Office Hours:	9:00AM – 12:00PM on Mondays;
Email:	scarson4@gmu.edu;
Final Exam:	**7:30PM – 10:15PM on Tuesday 13th December in Horizon Hall 1014**.

Course Description: Math 108 is a calculus course focusing on the mathematical ideas underlying, business economics, life and social sciences. This course utilizes basic math and calculus to model and represent situations found in business, in sciences and every day. This course is also designed to give support with basic math skill and comprehension. Basic math skills will be integrated alongside the lesson plan and during in-class work-sessions. Mathematical language will also be a primary focus introducing collegiate mathematical vocabulary and usage in the world. Introduce and develop arithmetic foundation needed to grasp mathematical concepts and ideas within various industries.

Course Objectives:
By the end of this course, students should be able to…

- Comprehend mathematics needed to manipulate and solve equations, interpret charts and graphs, and preform basic math and calculus operations.
- Gain knowledge and familiarity in the mathematics used in business, economic and social sciences and its application and interpretation to related problems.
- Achieve confidence and fluency of mathematical language and vernacular, calculation abilities and correct application.
- Strengthen basic math skill and logical abilities to solve problems in general science fields.
- Use mathematical language and terms to describe and solve business-related mathematical problems.

Required Texts: *You must have any readings or work from these texts ready by the first date*

- "Calculus for Business, Economics, Life Sciences and Social Science" Ed. 14.
With ACCESS CODE. Author: Barnett, Zeigler and Byleen; ISBN#: 9780134668574

---------- *Be sure to purchase a student access code for **MyMathLab.com**.* ----------

Grading
Students Grades will be based on personal performance during course meetings and online submitted material. All work submitted should be the student's genuine work. Students have *Homework assessment* every week to be submitted online through ***MyMathLab.com*** due on ***Mondays***. There will be a Quiz during the meetings on Thursdays. Students must attend each class and participate in the class activities. The lowest quiz scores and lowest homework scores will be dropped. There will be Midterm Exams and Final Exam.

Grades will be averaged and hold the following weight:

Homework: 20% | Quizzes: 20% | Collaborative Exams 10% | Midterm Exams: 25% | Final Exam: 25%

Grade Ranges: **A**- 100-90 **B**- 89-80 **C**- 79-70 **D**- 69-55 **F**- 54-below

(+/- for top/bottom grade range)

Classroom Conduct

Students are expected to attend class and participate in a respectful manner. Discussions on topics other than course related material are discouraged during class and lectures. Please note that the use of laptops is allowed as long as it does not become a distraction. If you are caught using the laptop for any other purpose than for class notes, you may be asked to remove the device. Cell phones are not to be used as a calculator, which is a university wide policy. The use of any recording device is strictly prohibited.

Students with Disabilities

It is university policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities. Students are encouraged to contact Student Disability Services to discuss their individualized needs for accommodation. If you have a documented learning disability or other condition that may affect academic performance in this course you should: 1. Make sure this documentation is on file with the Office of Disability Services (SUB I, Room 2500; 993-2474, ods.gmu.edu) to determine the accommodations you will need; and 2) talk with me to discuss your accommodation needs.

Technology Requirements

This course requires the use of computer technologies in and out of class. Students must check their email and access Blackboard regularly – throughout the day. Students will not be excused from assignments due to technology issues that are not reported before the assignment deadline. Students must use their Mason email accounts to receive important University information, including messages related to this class. The instructor will only send emails to a Mason email account. See http://masonlive.gmu.edu for more information. Recording this class is not allowed without permission.

Honor Code and Academic Honesty

By choosing to take this course, you agree to uphold the George Mason University Honor Code, which is discussed at length in your other coursework. All George Mason University students have agreed to abide by the letter and the spirit of the Honor Code. All violations of the Honor Code will be reported to the Honor Committee for review. Should a student *cheat, lie, steal, or plagiarize* after this discussion of academic honesty, in keeping with the University's Honor Code, any work considered being in violation of the Code due to integrity issues will be reported to the University Honor Committee. A failing grade on any assignment resulting from an Honor Committee process will result in a failing grade for the course.

Schedule: Here is the schedule for this class. Please note that this is a tentative plan only and any changes will be announced through Blackboard and announced in class a week in advance. *General Rule: Quizzes will be assigned and completed during Thursday classes and Homework will be assigned on Tuesday classes to be completed for the following Monday. Reviews and Collaborative Exams will be completed on Tuesdays in class and Midterm Exams will be completed on Thursdays in class. These will be announced at the start of the week too.*

Week:	Topics Covered:
1)	• 1.1 Functions • 1.2 Elementary Functions: Graphs and Transformations

2)	• 1.3 Linear and Quadratic Functions • 1.4 Polynomial and Rational Functions
3)	• 1.5 Exponential Functions • 1.6 Logarithmic Functions
4)	• 2.1 Introduction to Limits • 2.2 Infinite Limits and Limits at Infinity
5)	• Review of Topics covered from Weeks 1-4 • Collaborative Exam 1 • Midterm Exam 1
6)	• 2.4 The Derivative • 2.5 Basic Differentiation Properties • 2.6 Differentials
7)	• 2.7 Marginal Analysis in Business and Economics • 3.1 The Constant e and Continuous Compound Interest
8)	• 3.2 Derivatives of Exponential and Logarithmic Functions
9)	• 3.3 Derivatives of Products and Quotients • 3.4 The Chain Rule
10)	• Review of Topics Covered from Weeks 6-9 • Collaborative Practice Exam 2 • Midterm Exam 2
11)	• 3.5 Implicit Differentiation • 3.6 Related Rates
12)	• 3.7 Elasticity of Demand • 4.1 First Derivative and Graphs
13)	• 4.2 Second Derivative and Graphs • 5.1 Antiderivatives and Indefinite Integrals
14)	• 5.2 Integration by Substitution

15)	• 5.4 The Definite Integral • 5.5 The Fundamental Theorem of Calculus
	• Final Exam **7:30 – 10:15PM on Tuesday 13th December in Horizon Hall 1014**